

# TC-FX4040

## SERVICE MANUAL

*AEP Model*



'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

### SPECIFICATIONS

Tape Transport Mechanism Type TCM-150V4

#### Recording system

4-track 2-channel stereo

#### Fast-forward and rewind time

Approx. 100 sec. (with C-60 cassette)

#### Bias frequency

105 kHz

#### Signal-to-noise ratio (NAB, at peak level)

Cassette	Dolby NR switch	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METAL-ES)	55 dB	65 dB	71 dB	
TYPE II (Sony UCX)	55 dB	63 dB	69 dB	
TYPE I (Sony HF-S)	52 dB	61 dB	67 dB	

#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK **⚠** ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

#### Total harmonic distortion

1.0% (with Sony METAL-ES cassette)

#### Frequency response

DOLBY NR OFF

• With TYPE IV cassette (Sony METAL-ES)

20 - 17,000 Hz

30 - 16,000 Hz (±3 dB)

30 - 13,000 Hz (±3 dB, 0 VU recording)

30 - 16,000 Hz (DIN)

• With TYPE II cassette (Sony UCX)

20 - 17,000 Hz

30 - 14,000 Hz (±3 dB)

30 - 16,000 Hz (DIN)

• With TYPE I cassette (Sony HF-S)

20 - 16,000 Hz

30 - 13,000 Hz (DIN)

#### Wow and flutter

0.05% WRMS (NAB)

±0.14% (DIN)

#### Inputs

Microphone inputs (phone jacks)

Sensitivity 0.25 mV (-70 dB)

For a low impedance microphone

Line inputs (phono jacks)

Sensitivity 77.5 mV (-20 dB)

Input impedance 47 kilohms

Line outputs (phono jacks)

Output level 0.44 V (-5 dB) at load impedance 4.7 kilohms

Load impedance over 10 kilohms

Headphone output (stereo phone jack)

Output level -28 dB at a load impedance of 8 ohms

— Continued on next page —

**STEREO CASSETTE DECK**  
**SONY**®



**TC**

# TC-FX4040

## General

### Power requirements

220 V ac, 50/60 Hz  
(240 V ac adjustable by authorized Sony  
personnel)

### Power consumption

12 watts

### Dimensions

Approx. 430 × 105 × 245 mm (w/h/d)

(17 × 4 1/4 × 9 3/4 inches)

including projecting parts and controls

### Weight

Approx. 3.6 kg (7 lbs 15 oz)

## Note

This appliance conforms with EEC Directives 76/889 and 82/499  
regarding interference suppression.

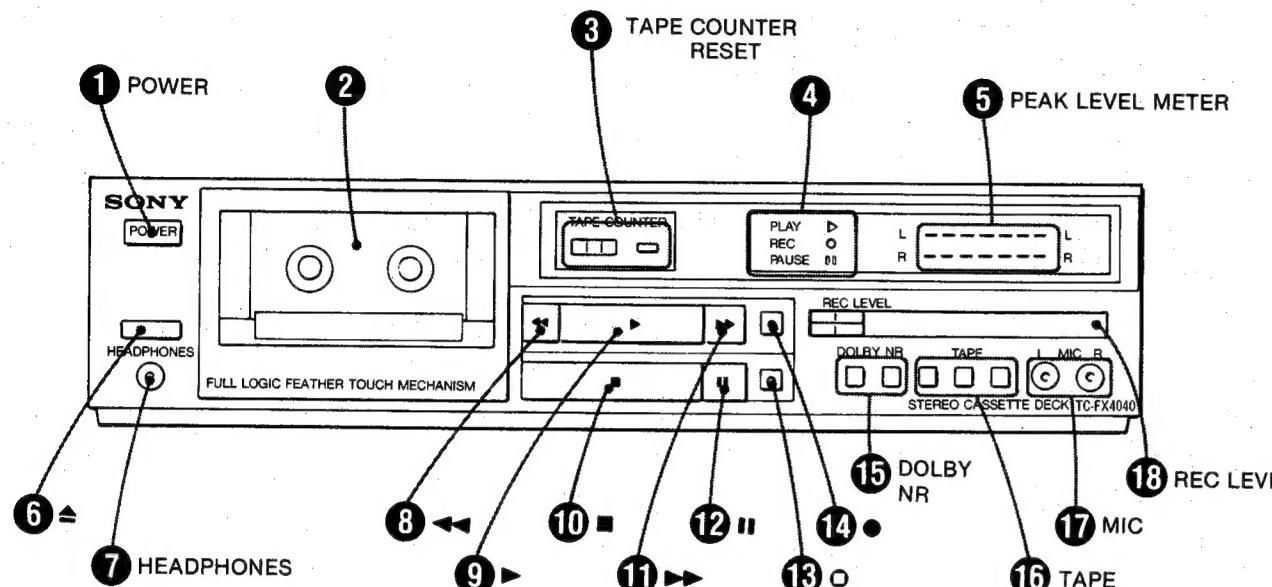
## SECTION 1 OUTLINE

TC-FX4040

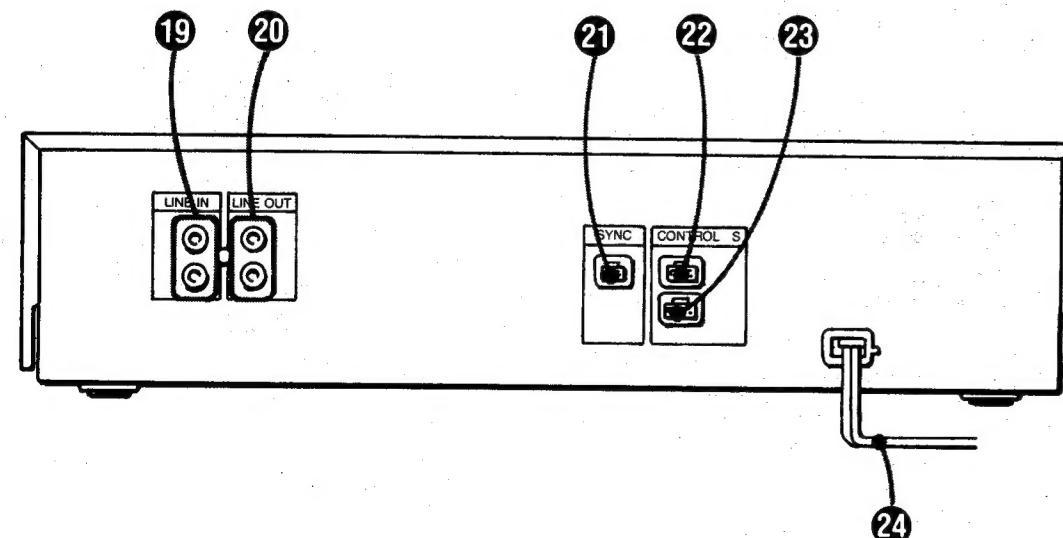
TC-FX4040

### 1-1. FUNCTION OF CONTROLS

**A**



**B**



Each number in the text is keyed to that of the illustrations on pages 3.

Front panel (Fig. A)

① POWER switch

② Cassette holder

③ TAPE COUNTER and RESET button

The tape counter provides a numerical reference point while recording which can be used to index a recorded cassette. To reset to zero, press the RESET button.

④ Function indicators

⑤ PEAK LEVEL METERS

These meters show the peak input level of each channel during recording, and recorded levels in the playback mode.

⑥ ▲ (eject) button

Press this button to open the cassette holder.

⑦ HEADPHONES jack (stereo phone jack)

⑧ ◀ (rewind) key

Press this key to advance the tape rapidly to the left. It is also used for the auto play and review functions.

⑨ ▶ (playback) key

Press this key to playback the cassette. To record, press this key while holding the ● key down. The tape is transported to the right.

⑩ ■ (stop) key

⑪ ▶▶ (fast-forward) key

Press this key to advance the tape rapidly to the right. It is also used for the cue function.

⑫ II (pause) key

Press this key to stop the tape running for a moment during recording or playback. This key is also used for the cue and review functions.

⑬ ○ (record muting) key

Press this key to eliminate unwanted material and to insert a blank space during recording.

⑭ ● (record) key

Press this key together with the ▶ key to start recording.

⑮ DOLBY NR\* switch

For recording or playback with Dolby B-type system, set the DOLBY NR switch to B. For recording or playback with Dolby C-type NR system, set it to C. For recording without Dolby NR system, set it to OFF.

\* "Dolby" and the double-D symbol are trade marks of the Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

The Dolby NR system reduces tape hiss and improves the signal-to-noise ratio at low-level high-frequency signals.

⑯ TAPE select buttons

Depress one of the TAPE select buttons, depending on which type of tape you use. The optimum bias current adjustment for recording and the optimum equalization adjustment for both recording and playback are set.

⑰ MIC jacks (phone jack)

Any low-impedance microphone equipped with a phone plug may be used.

⑱ REC LEVEL (recording level) controls

These controls adjust the recording level.

Rear panel (Fig. B)

⑲ LINE IN (line input) jacks (phono jack)

Accept tape outputs from an amplifier for tape recording and line outputs from another tape deck when dubbing a tape onto that unit.

⑳ LINE OUT (line output) jacks (phono jack)

Accept tape inputs from an amplifier for playing back a tape and line inputs from another tape deck for dubbing a tape onto that unit.

㉑ SYNC connector (3-pin)

For synchro recording, connect to the SYNC connector of the turntable system. For further details, refer to the instruction manual of the Sony turntable system.

㉒ CONTROL S IN connector

Connect to the CONTROL S OUT connector of Sony audio equipments equipped with a 4-pin remote control connector.

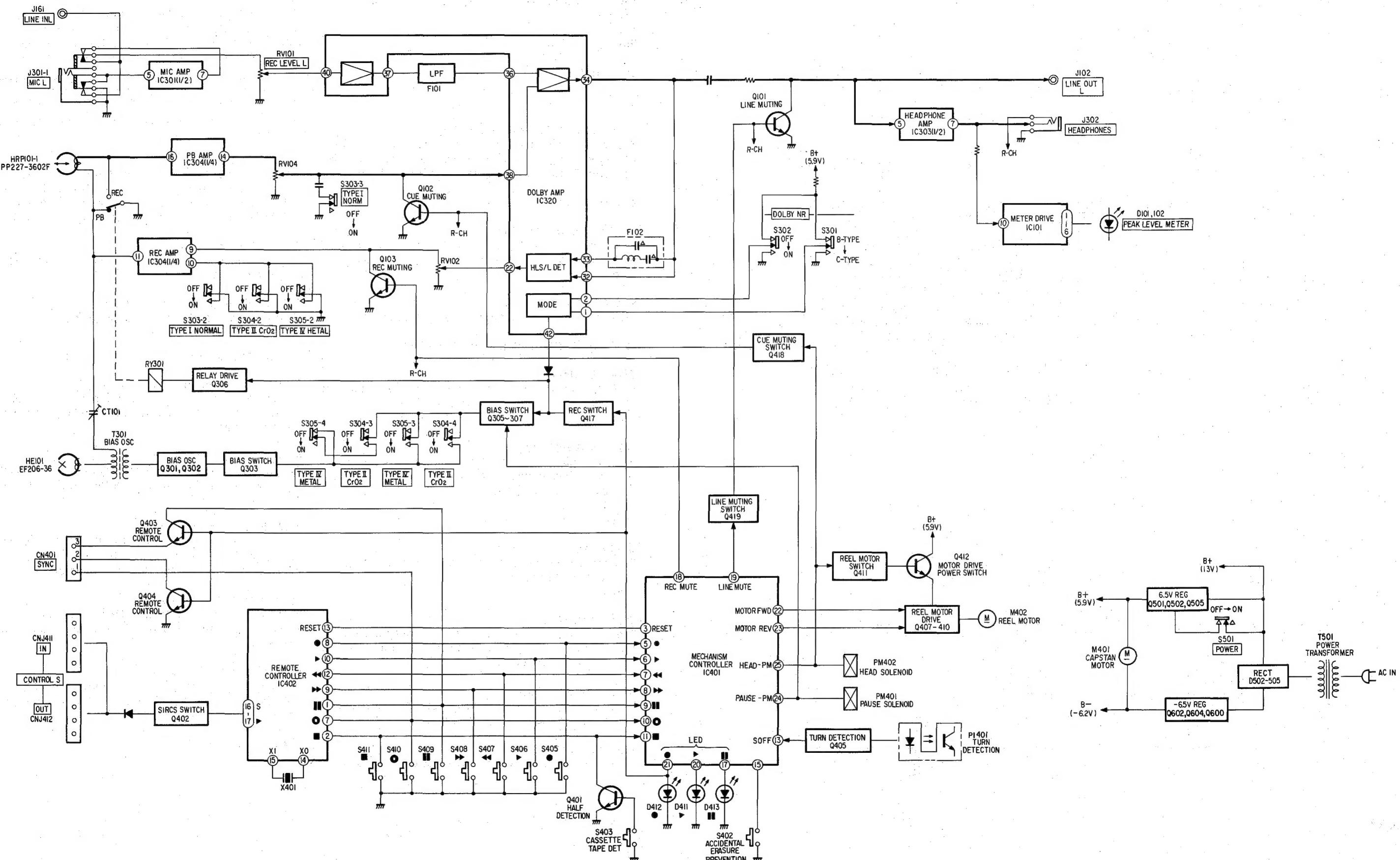
㉓ CONTROL S OUT connector

Connect to the CONTROL S IN connector of Sony audio equipments equipped with a 4-pin remote control connector.

㉔ AC power cord

# TC-FX4040 TC-FX4040

## 1-2. BLOCK DIAGRAM



## SECTION 2

### DISASSEMBLY

**Note:** Follow the disassembly procedure in the numerical order given.

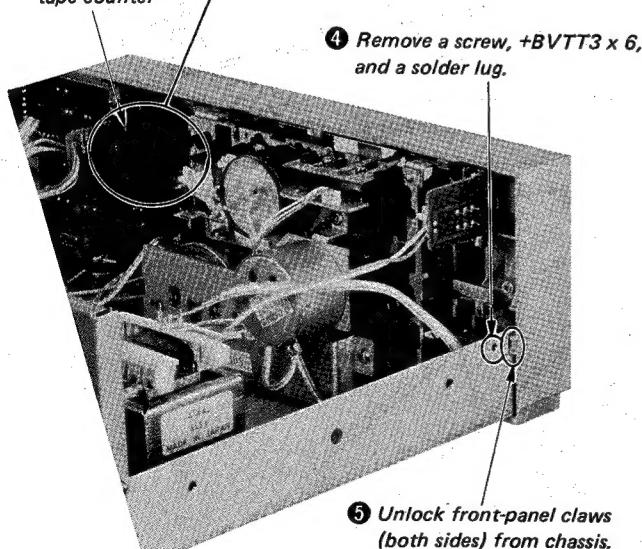
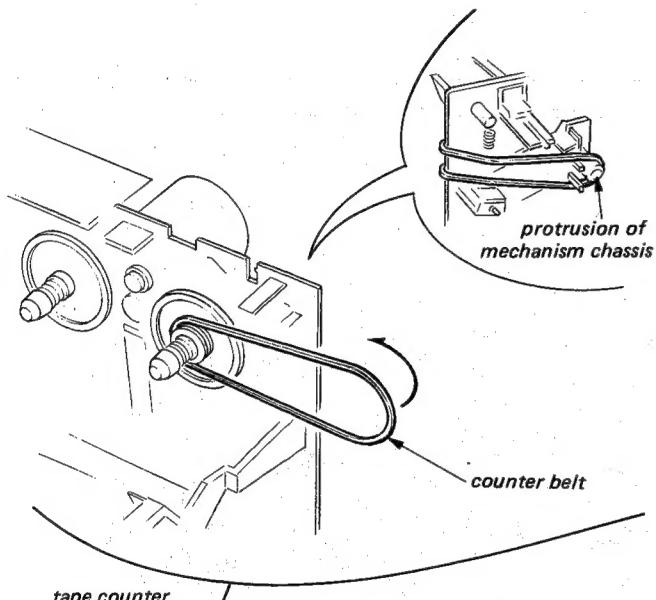
#### CASE

Remove four (4) screws and case.



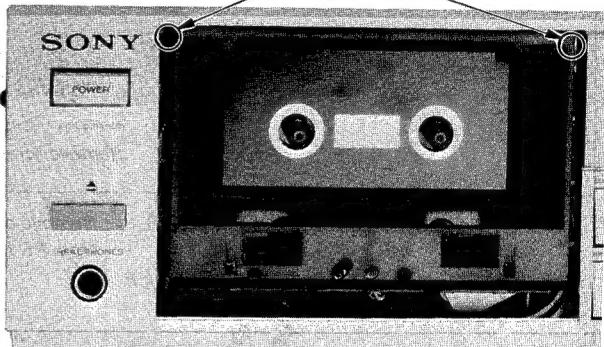
#### FRONT PANEL

- ① Remove counter belt and temporarily hang it on the protrusion of the mechanism chassis.

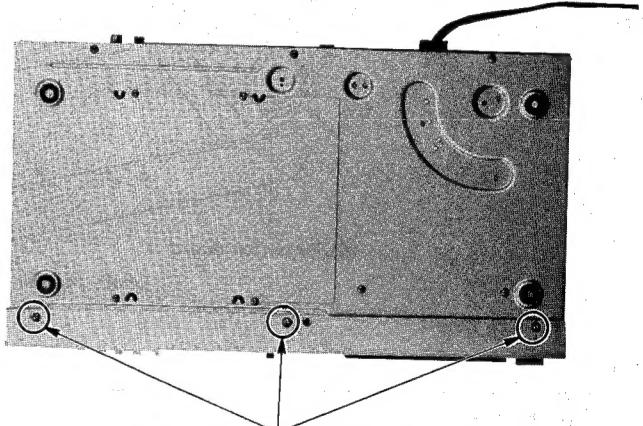


- ⑤ Unlock front-panel claws (both sides) from chassis.

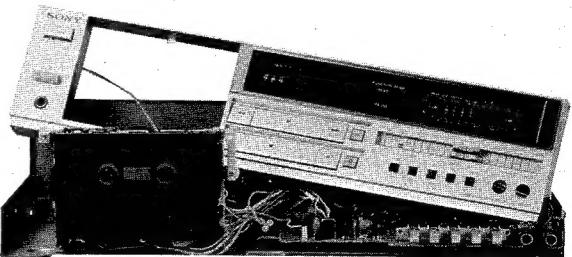
- ② Remove screws, +BVTT3 x 6 (two).

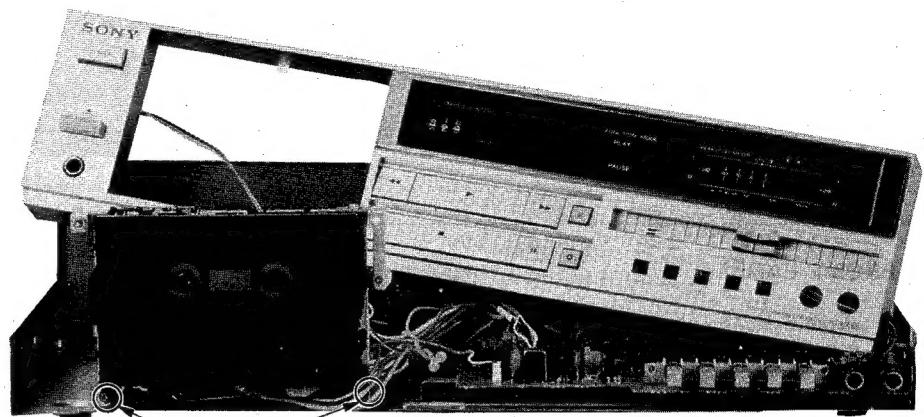


- ③ Remove screws, +BVTT3 x 6 (three).



- ⑥ Pull front panel forward. Take care not to break lead wires extracting from PC boards. Front panel contains six (6) PC boards.

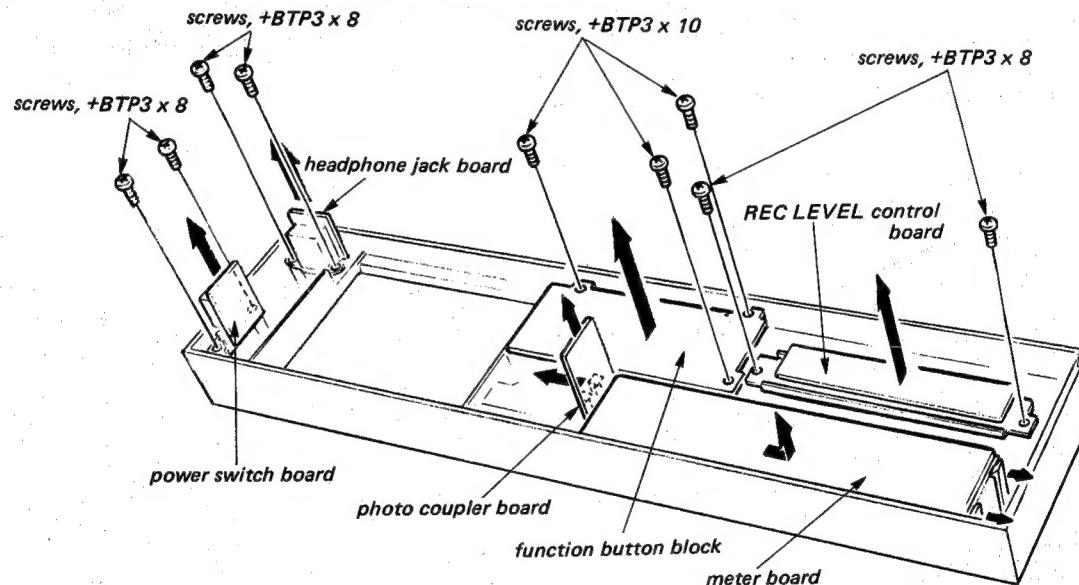
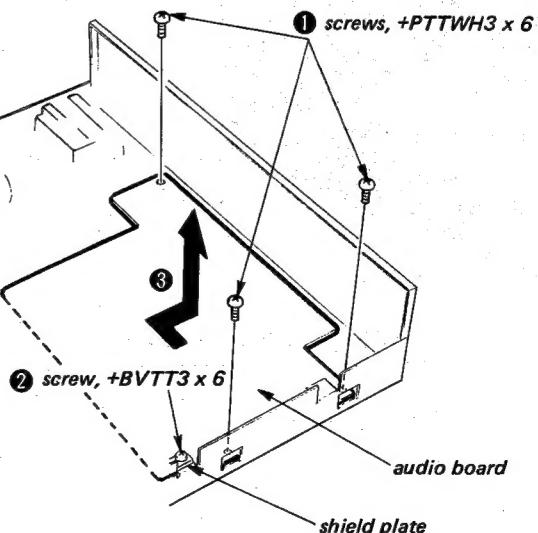


**DECK MECHANISM**

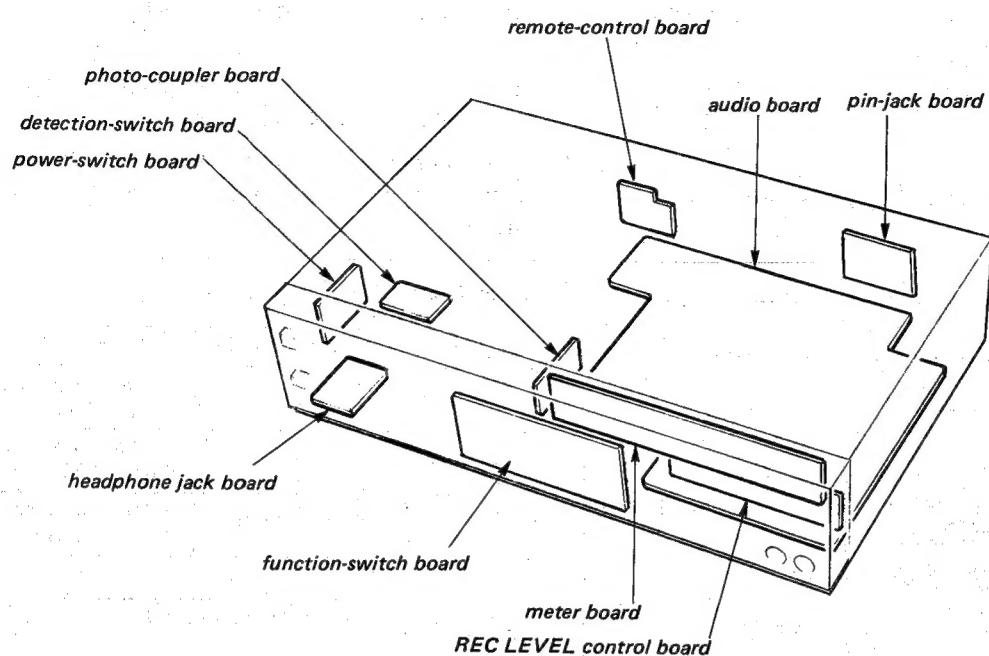
Remove screws, +BVTT3 x 6 (two).

**PC BOARDS FROM FRONT PANEL**

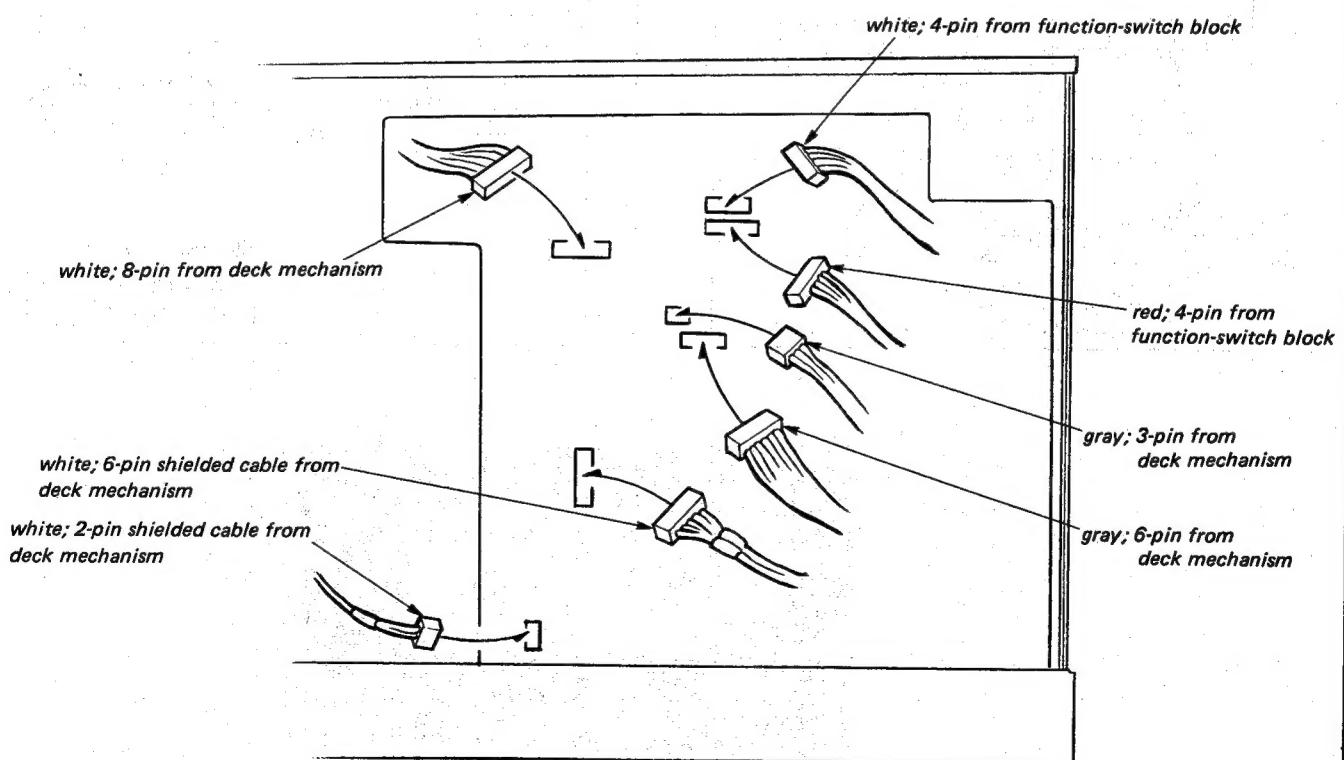
Remove appropriate screws or unlock appropriate claws from PC boards as shown.

**AUDIO BOARD**

## LOCATION OF PRINTED-CIRCUIT BOARDS



## RECONNECTING CONNECTORS



SECTION 3  
ADJUSTMENTS

## 3-1. MECHANICAL ADJUSTMENTS

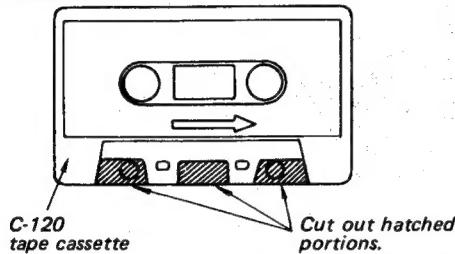
## PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
 

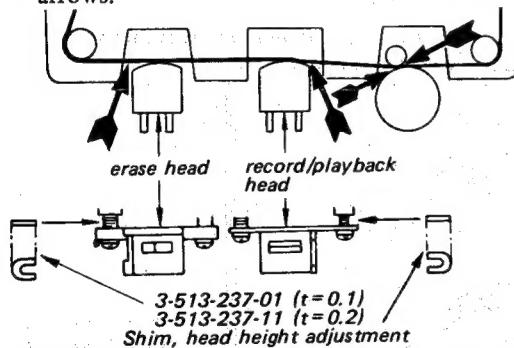
record/playback head	pinch roller
erase head	rubber belts
capstan	
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

## Head Height Adjustment

1. Prepare an adjustment cassette as shown below, or mirror cassette.



2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at the portions shown by the arrows.



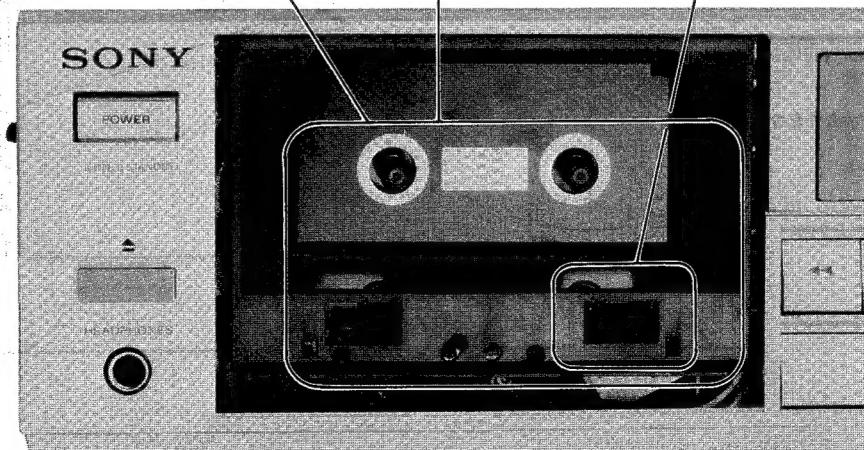
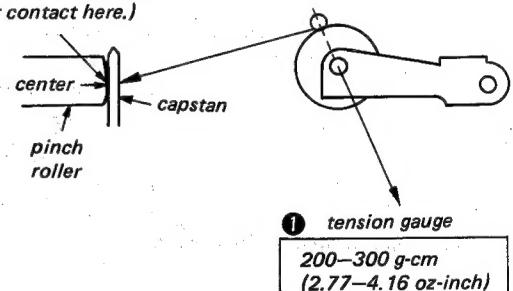
## Torque Measurement

Torque	Torque meter	Meter reading
Forward	CQ-102C	28 – 60 g-cm (0.41 – 0.8 oz-inch)
Back Tension	CQ-102C	2.5 – 6 g-cm (0.03 – 0.08 oz-inch)
Fast Forward and Rewind	CQ-201B	80 – 150 g-cm (1.1 – 2.0 oz-inch)

## Pinch Roller Pressure Measurement

## — Playback Mode —

- ② Slowly return the pinch roller and read the spring scale just when the pinch roller starts rotating. (The capstan should first contact here.)



## 3-2. ELECTRICAL ADJUSTMENTS

**Note:** The adjustment should be performed in the order given in this service manual. The adjustments should be performed for both L-CH and R-CH.

- TAPE switches are automatically set according to the tape.

Tape	TAPE Indicator
CS-17	TYPE I : NORMAL
CS-26	TYPE II : CrO <sub>2</sub>
CS-40(CS-412)	TYPE IV : METAL

- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch: OFF

- Standard Record:

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

## Standard Input Level

	LINE IN
source impedance	10kΩ
input level	0.25V (-10dB)

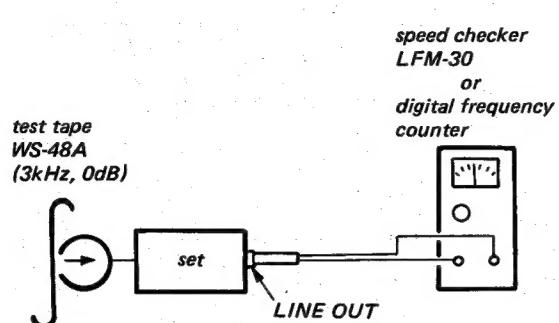
## Standard Output Level

	LINE OUT
load impedance	47kΩ
output level	0.435V (-5dB)

## Speed Adjustment

## Procedure:

Mode: playback



## Specification:

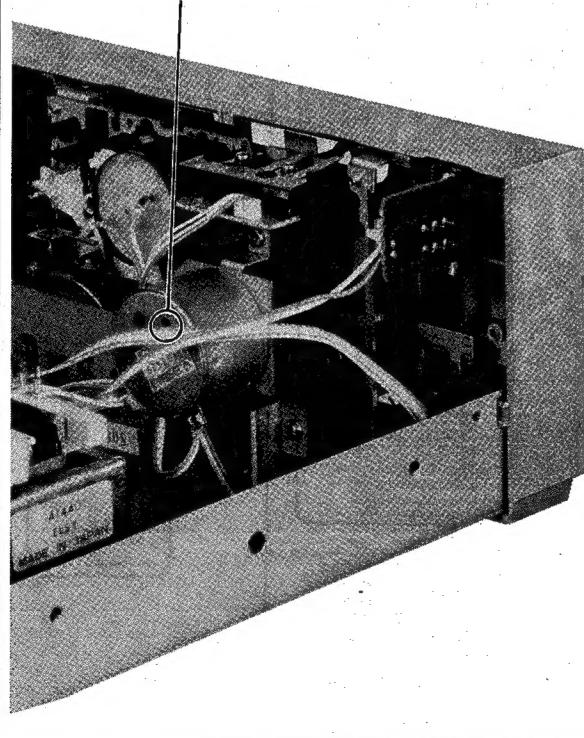
Speed checker	Digital frequency counter
-1 ~ +1%	2,970 ~ 3,030Hz

Frequency difference between the beginning and the end of the tape should be within 0.8% (25Hz).

## Adjustment Location:

— capstan motor —

adjustment control inside motor

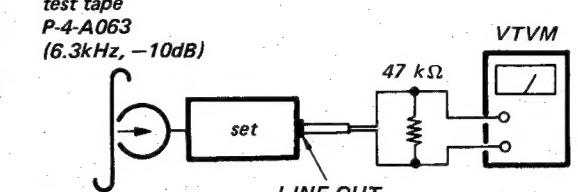


## Record/playback Head Azimuth Adjustment

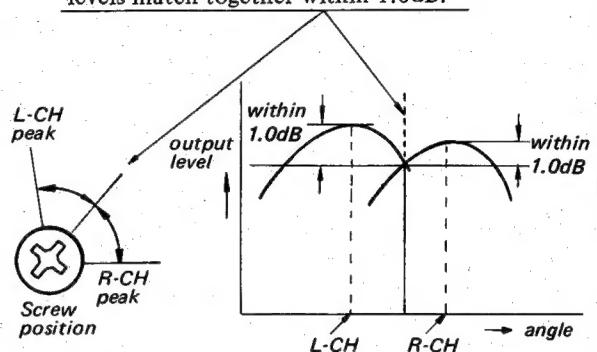
## Procedure:

1. Mode: playback

test tape  
P-4-A063  
(6.3kHz, -10dB)



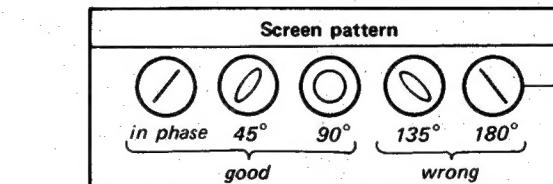
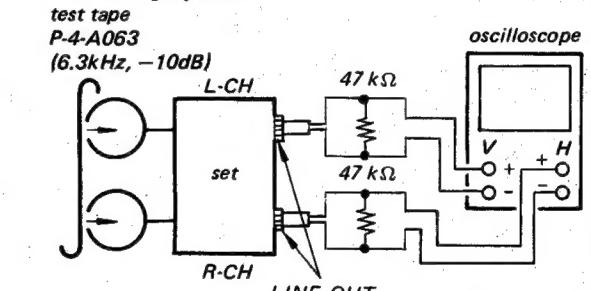
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1.0dB.



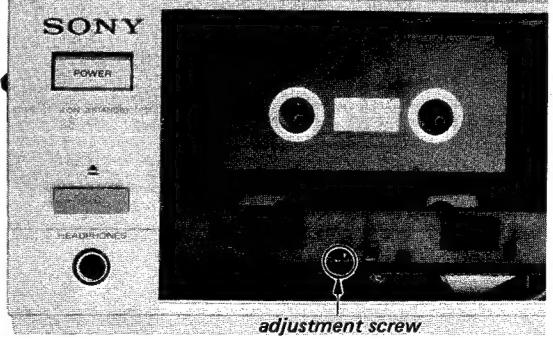
3. Phase Check

Mode: playback

test tape  
P-4-A063  
(6.3kHz, -10dB)



## Adjustment Location:

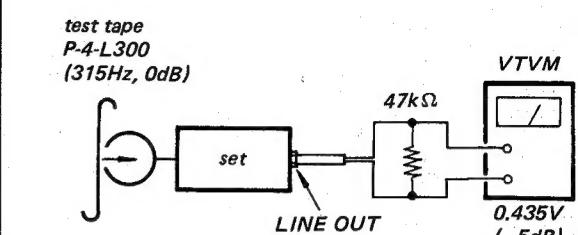


## Playback Level Adjustment

## Procedure:

Mode: playback

test tape  
P-4-L300  
(315Hz, 0dB)



Adjust RV104 (L-CH) and RV204 (R-CH).

## Specification:

LINE OUT level: 0.46 ~ 0.42V  
(-4.5 ~ -5.5dB)

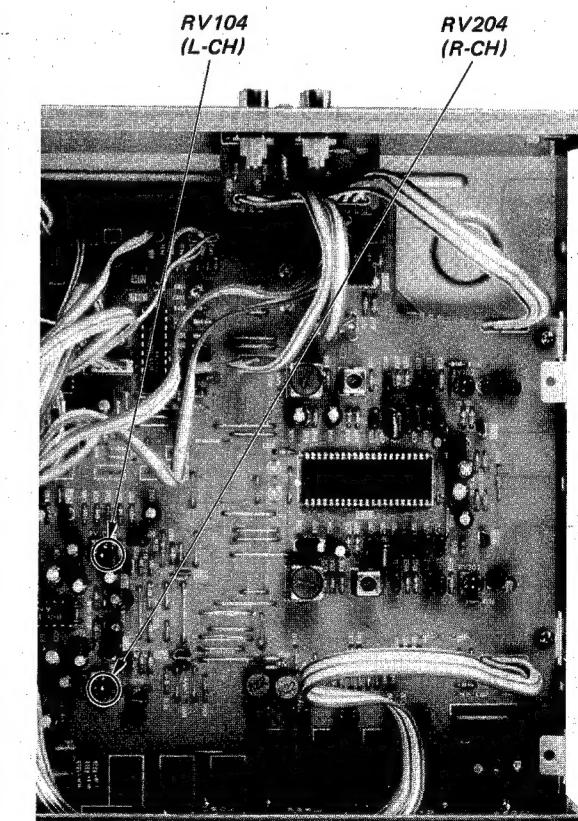
Level difference between channels:

less than 0.5dB (0.05V)

Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

## Adjustment Location:

— audio board —



**Adjustment**

**Playback Level Adjustment**

**Procedure:**  
Mode: playback

test tape  
P-4-L300  
(315Hz, 0dB)

47 kΩ

VTVM

47 kΩ

0.435V  
(-5dB)

LINE OUT

for the maximum do not match, turn both of output 1.0dB.

Adjust RV104 (L-CH) and RV204 (R-CH).

**Specification:**  
LINE OUT level: 0.46 – 0.42V  
(-4.5 – -5.5dB)  
Level difference between channels:  
less than 0.5dB (0.05V)  
Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

**Adjustment Location:**  
– audio board –

RV104 (L-CH)

RV204 (R-CH)

oscilloscope

135° 180° wrong

crew

**Record Bias Adjustment**

**Setting:**  
REC LEVEL control: standard record  
(See page 11)

**Procedure:**  
1. Mode: record  
af osc

attenuator

blank tape CS-17

10kΩ

600Ω

LINE IN  
1) 315Hz } 25mV (-30dB)  
2) 10kHz }

set

2. Mode: playback  
recorded portion

47 kΩ

VTVM

LINE OUT

Adjust CT101 (L-CH) and CT201 (R-CH) so that the LINE OUT level of 10kHz signal is 0dB ± 0.5dB relative to that of 315Hz.

**Adjustment Location:**  
– audio board –

CT101 (L-CH)

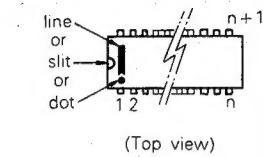
CT201 (R-CH)

RV202 (R-CH)

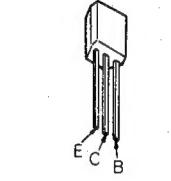
RV102 (L-CH)

## Semiconductor Lead Layouts

CX10032A  
CX20187  
IR2E02  
M50761-417P  
M5218L  
TC9310N-071



2SA1175  
2SD1020



DTA114ES  
DTA144WS  
DTC114ES  
2SB808  
2SC2603F  
2SD1012



HZ6A3L  
HZ6B3L  
1SS202-1  
10E2  
11E2



cathode

2SB731  
2SD809-K



GL-9PG4



cathode

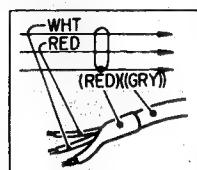
anode

## 4-1. MOUNTING DIAGRAM

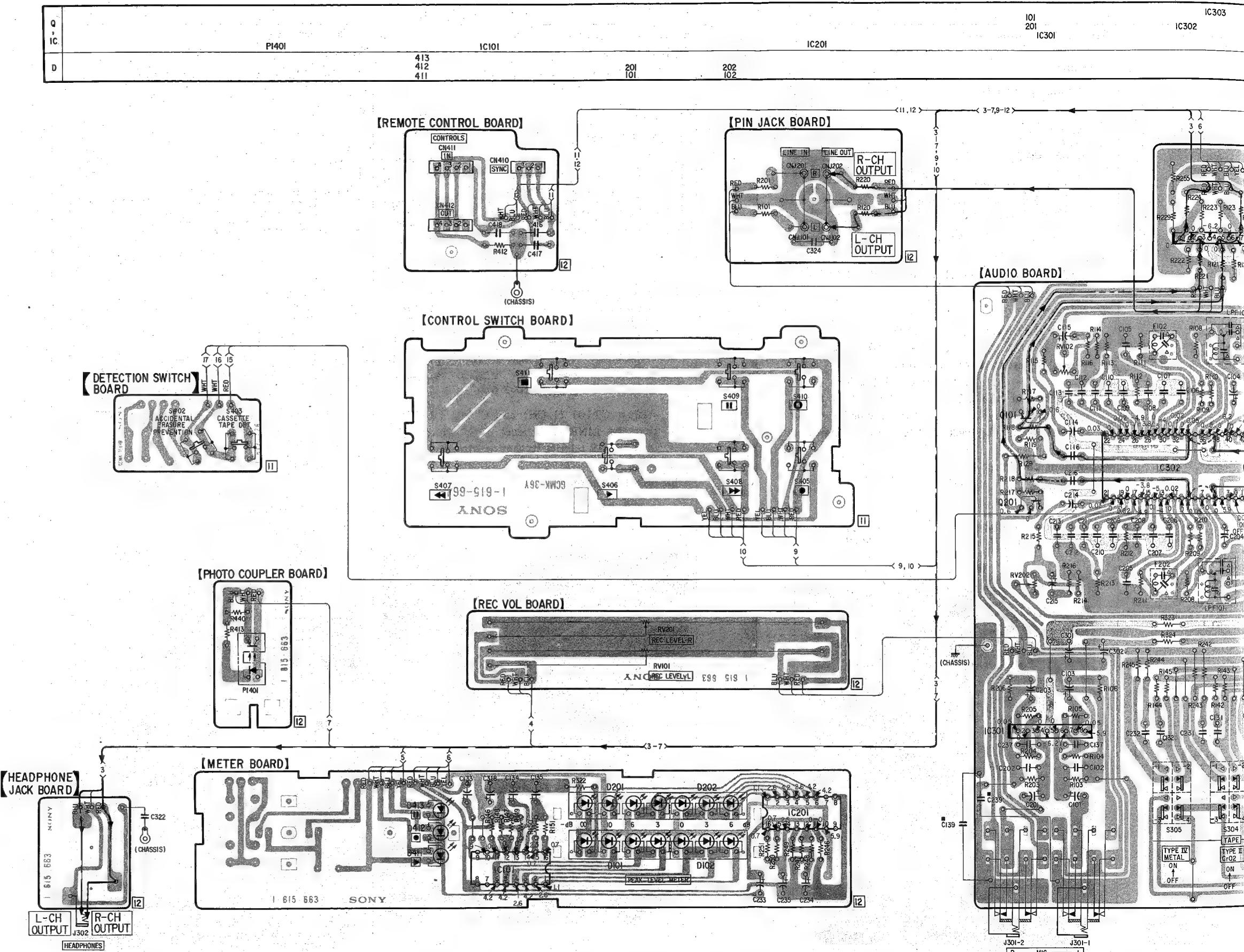
## —Conductor Side—

(Refer to page 14 for semiconductor lead layouts.)

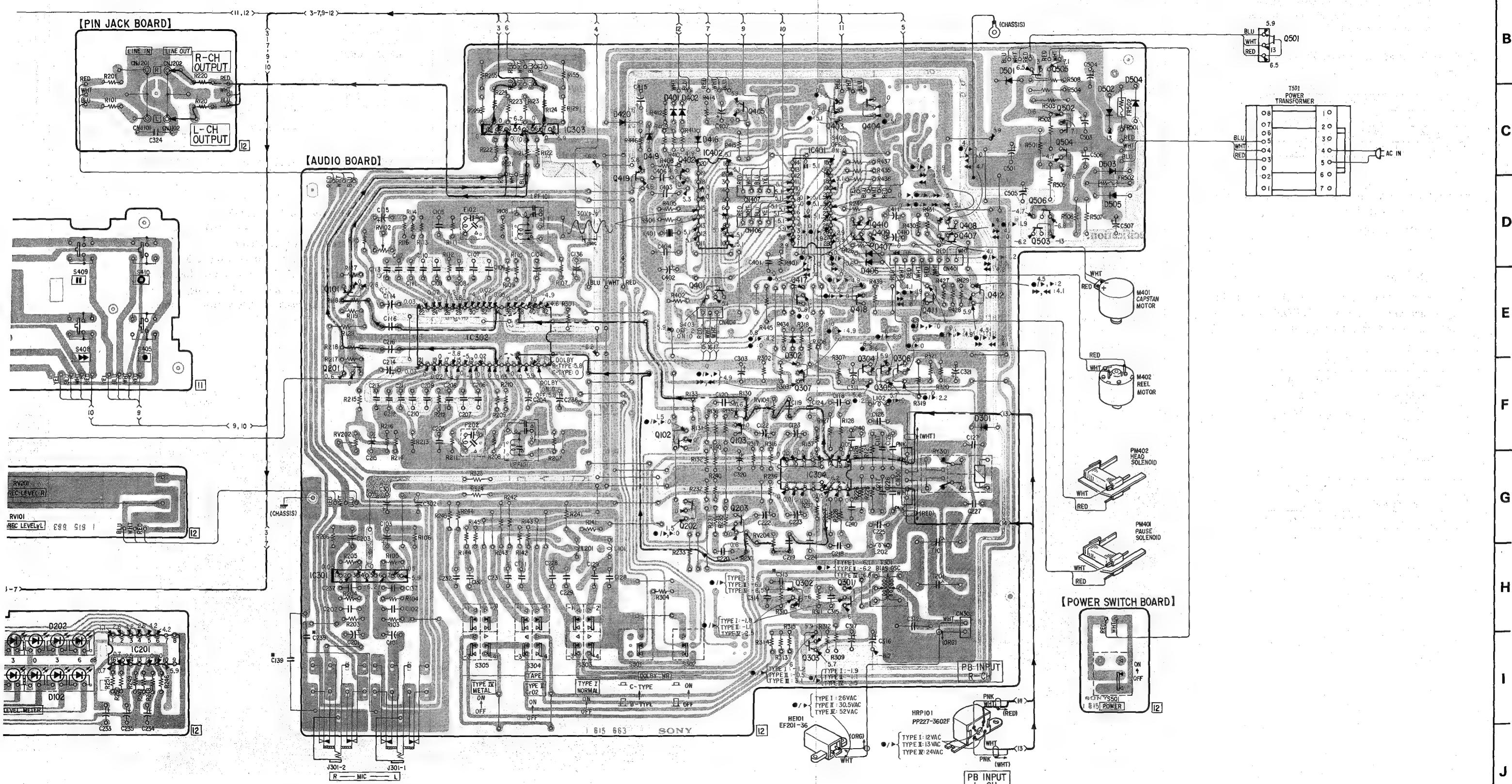
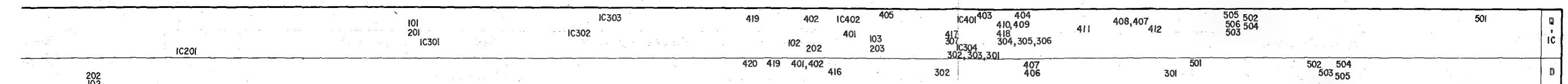
Note:  
 • Color code of sleeving over the end of the jacket.

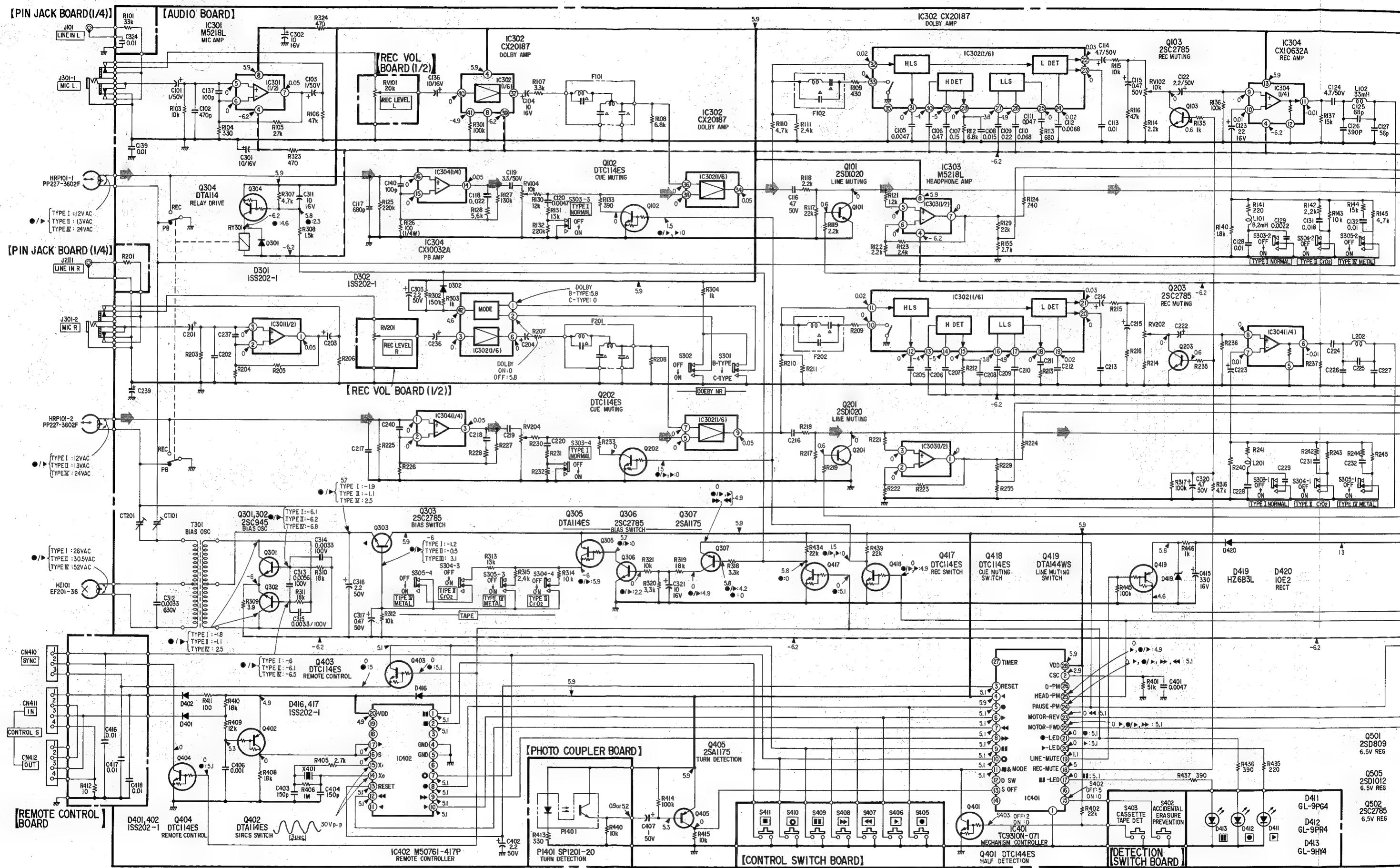


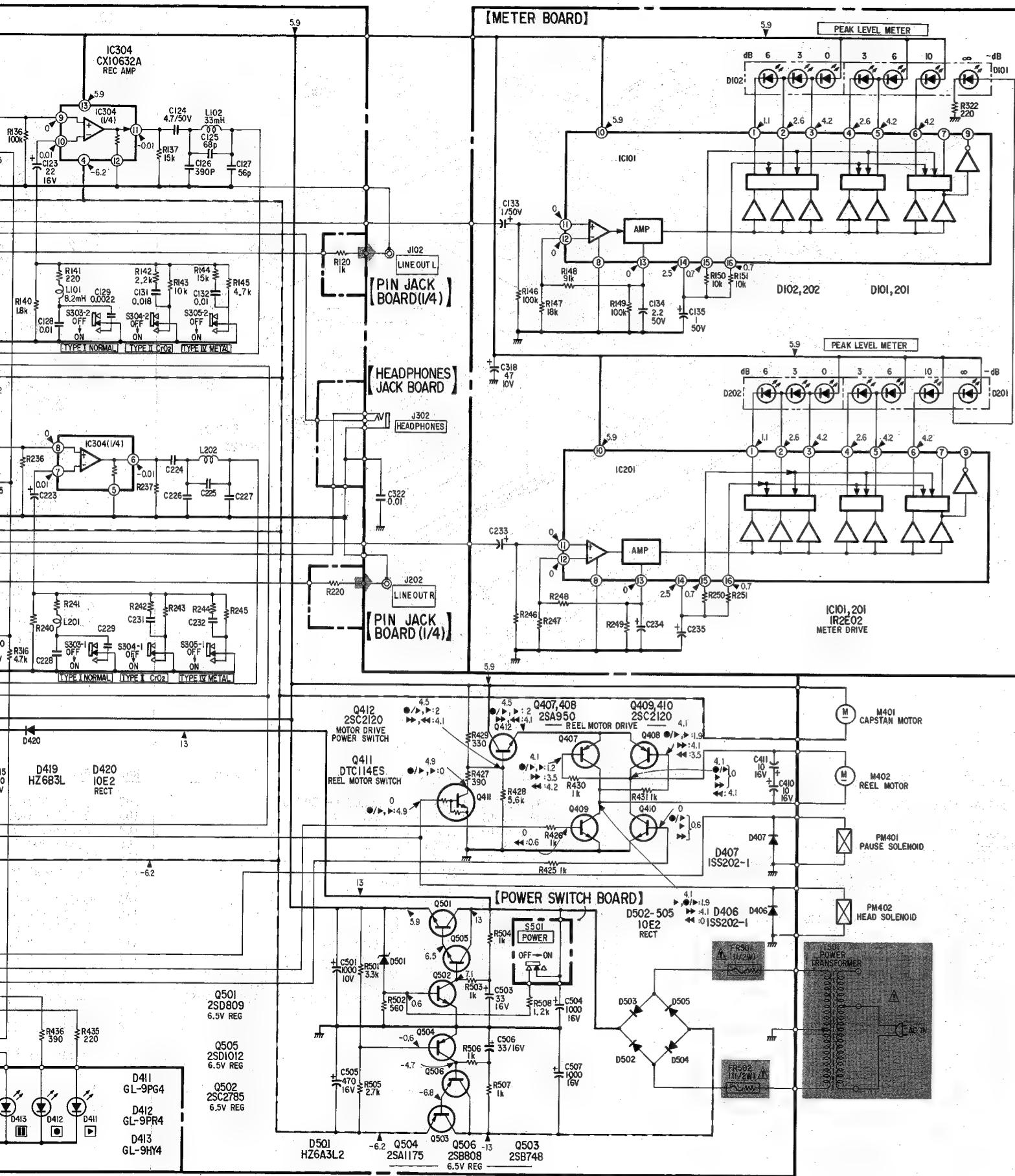
- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : part mounted on the conductor side.
- : indicates side identified with part number.
- : signal path
- : L-CH signal path
- ← : R-CH signal path
- : B + pattern
- : B - pattern



11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27







Not

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\mu\text{F}$   
50 WV or less are not indicated except for electrolytics and tantalums.
  - All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
  -  : signal path.
  - Components for right channel have same values as for left channel. Reference numbers are coded from 201.
  -  : internal component.
  -  : fusible resistor.
  -  : B+ bus.
  -  : B- bus.
  -  : adjustment for repair.
  - AC voltage readings in the bias oscillator with a VTVM.
  - Voltages are dc with respect to ground unless otherwise noted.
  - Readings are taken under no-signal conditions with a VOM (50k $\Omega$ /V).
  -  : PLAY
  -  : FF
  -  : REW
  -  : STOP
  -  : RECORD
  - NO MARK : COMMON
  - Waveforms are taken to ground by using oscilloscope. Voltage variations may be noted due to normal production tolerances.

**Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.**

**SECTION 5**  
**EXPLODED VIEWS AND PARTS LIST**

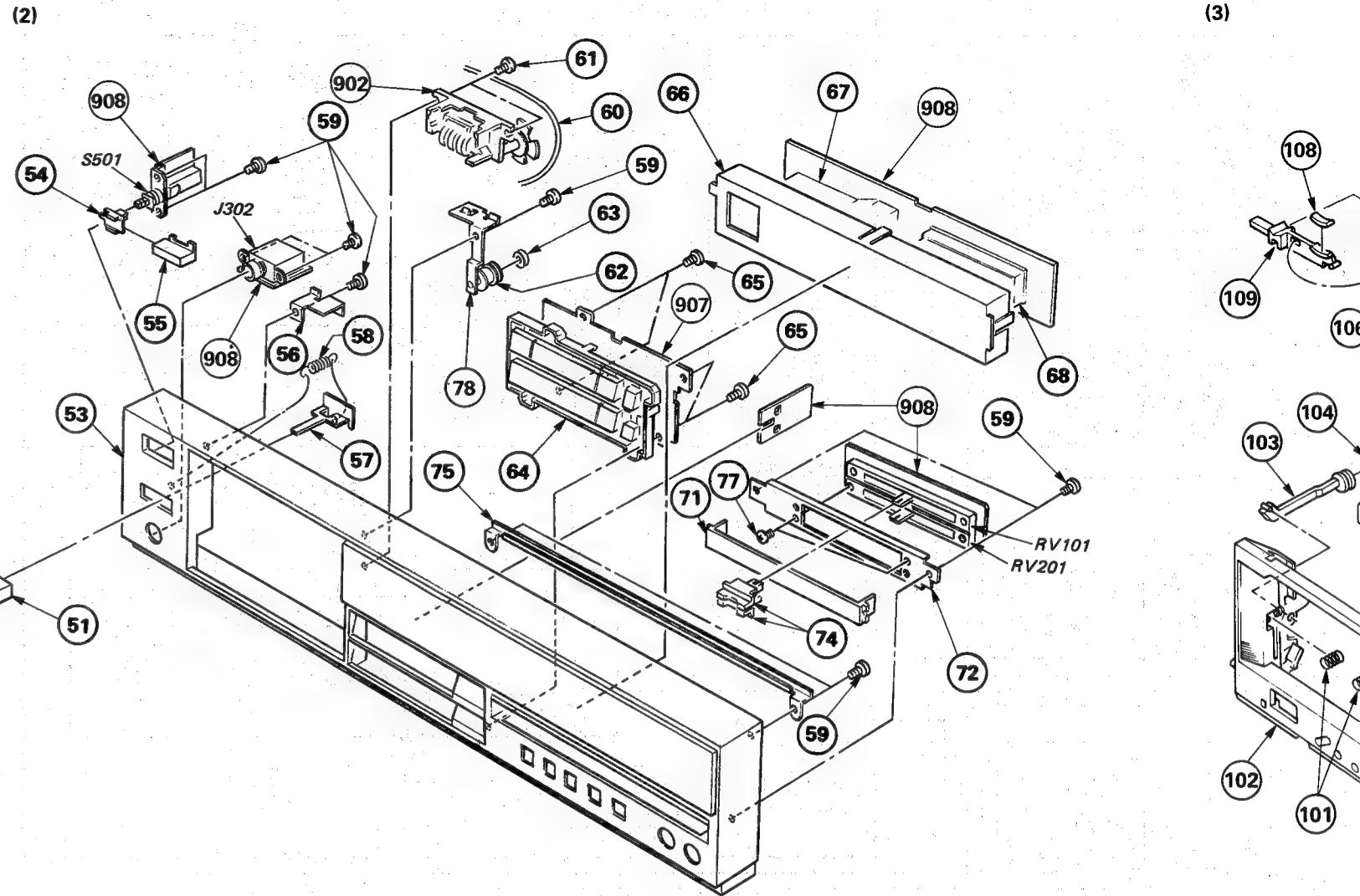
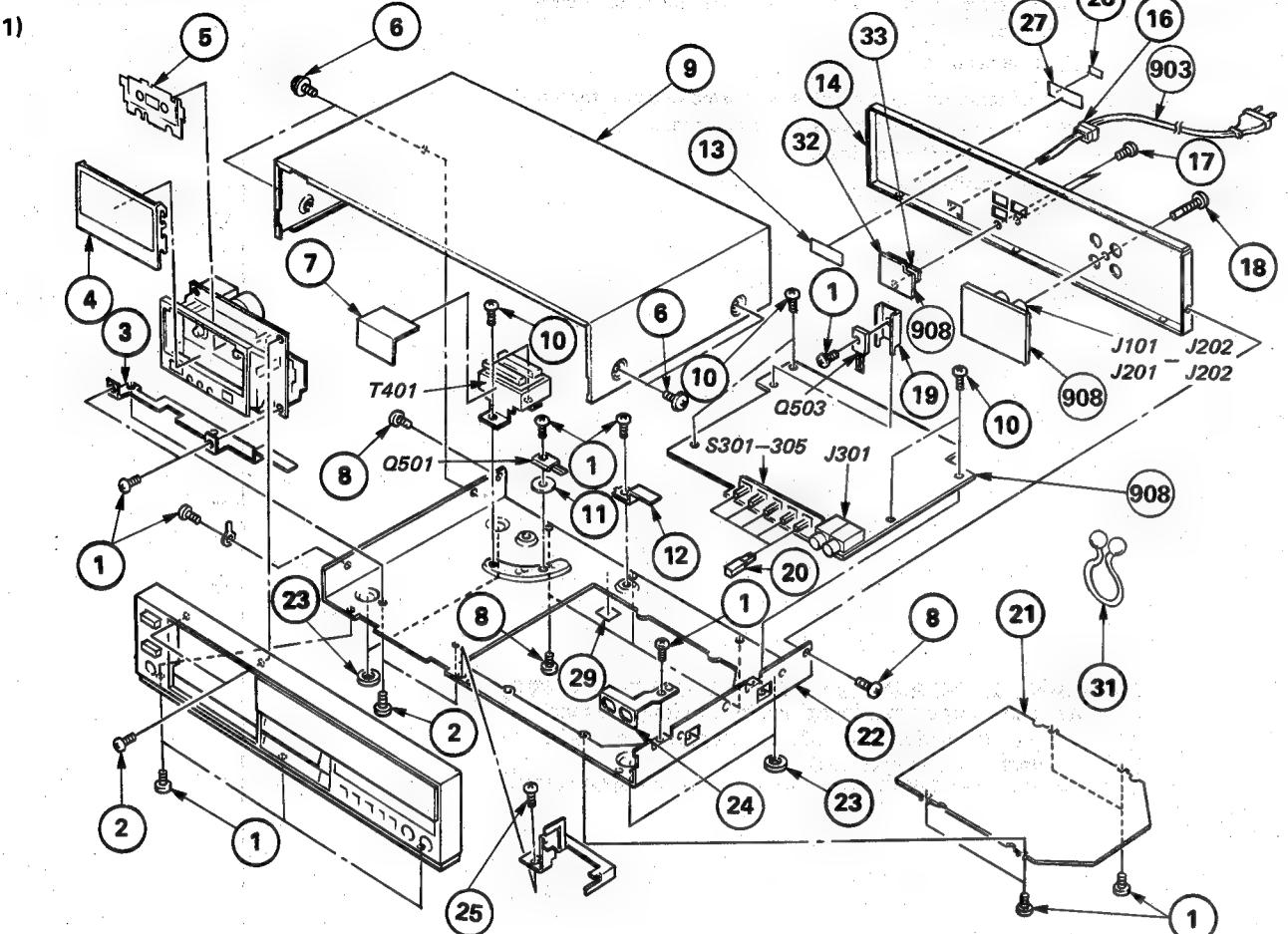
## NOTE:

The mechanical parts with no reference number in the exploded views are not supplied.

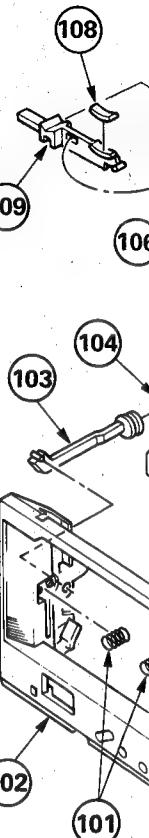
Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The construction parts of an assembled part are indicated with a callout number in the remark column.

The components identified by shading and mark  are critical for safety. Replace only with part number specified.



(3)

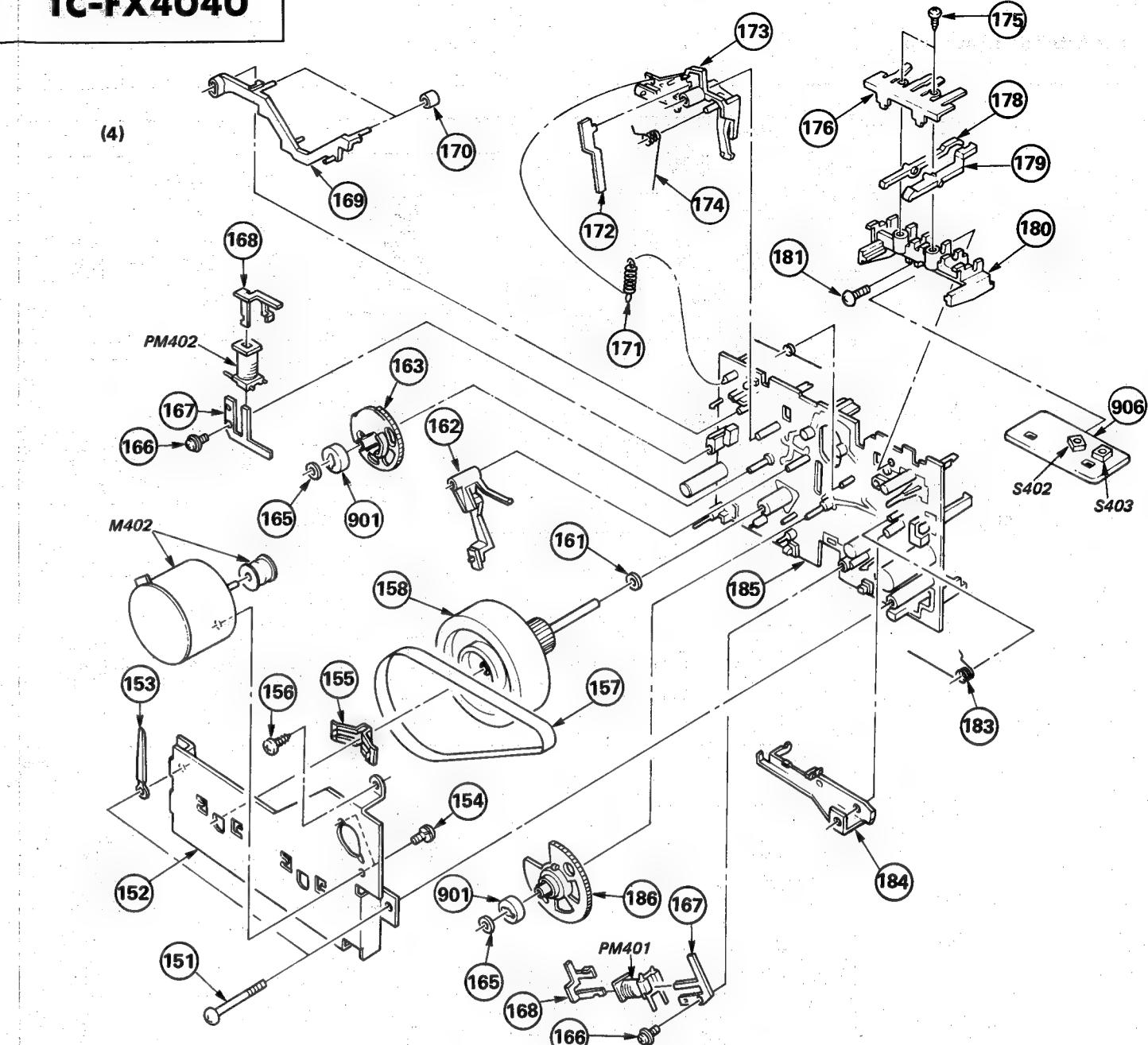
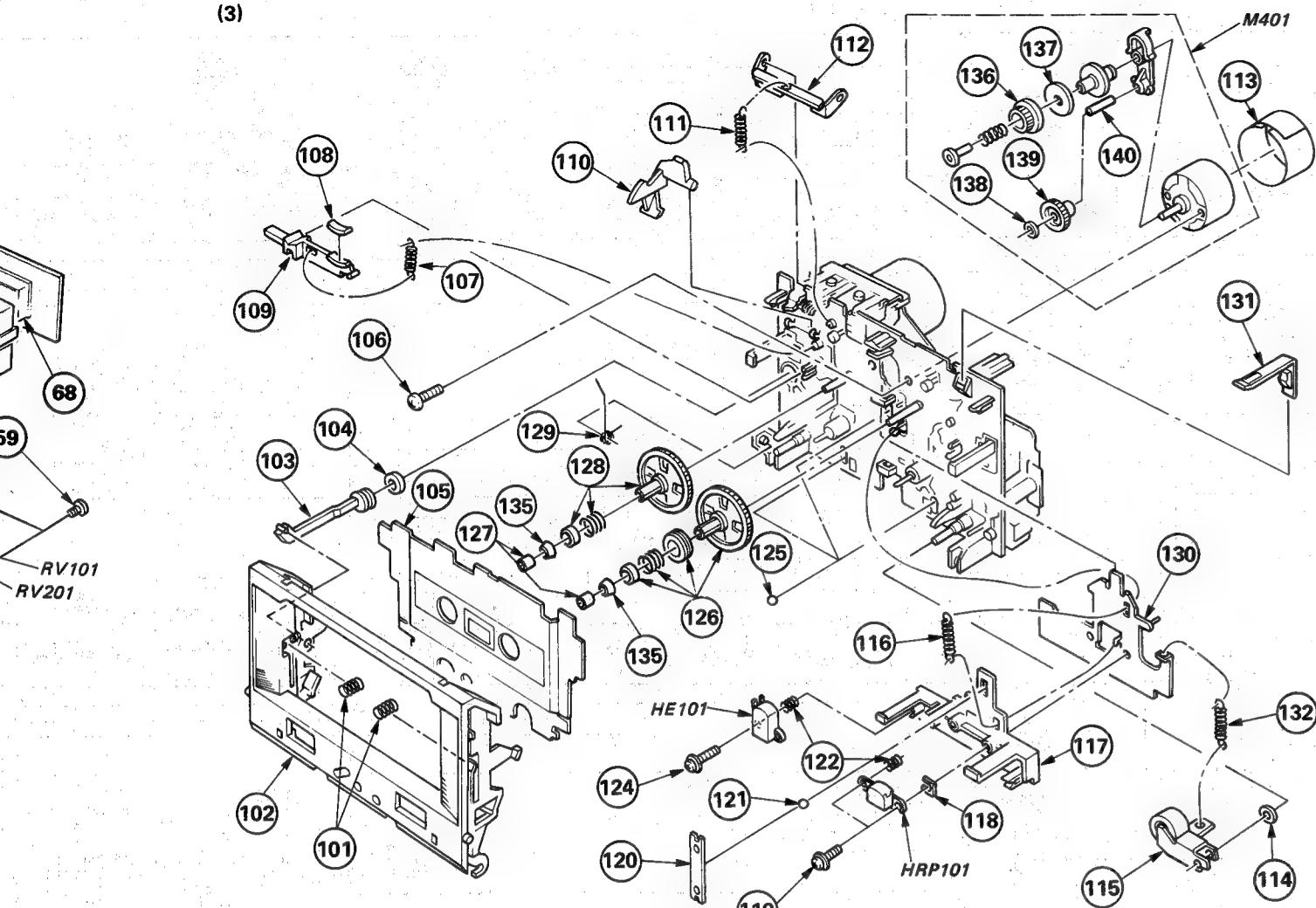


No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	7-685-871-01	SCREW +BVTT 3X6 (S)		20	3-327-601-11	KNOB, SQUARE	
2	7-685-751-09	SCREW +BVTT 3X6 (S)		21	*3-318-946-01	PLATE, BOTTOM	
3	*3-318-975-01	BRACKET (A), MD		22	*3-318-948-13	CHASSIS	
4	X-3318-920-1	LID ASSY, CASSETTE		23	3-576-731-00	FELT (H)	
5	3-313-292-21	RETAINER, CASSETTE		24	*3-318-973-01	PLATE, SHIELD	
6	4-889-321-11	SCREW		25	7-682-546-04	SCREW +BVTT 3X5 (S)	
7	9-911-863-XX	SCREW, INSULATING		26	*3-318-969-01	RETAINER, PC BOARD	
8	7-685-752-04	SCREW +BVTT 3X8 (S)		27	*3-318-999-01	LABEL, MODEL NUMBER	
9	3-318-998-01	CASE		28	*4-302-759-00	LABEL, SERIAL NUMBER	
10	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6		29	.....		
11	3-572-365-11	SCREW, INSULATING (A)		30	.....		
12	*3-318-963-01	BRACKET, AUDIO PC BOARD		31	3-315-159-01	PURSE LOCK (14 DIA.)	
13	*3-701-030-00	LABEL, SERIAL NUMBER		31	3-701-417-00	PURSE LOCK (11 DIA.)	
14	*3-307-530-73	PLATE, JACK		32	*3-322-818-01	HOLDER, CONNECTOR	
15	.....			33	*3-322-819-01	HOLDER, CONNECTOR	
16	3-703-244-00	BUSHING (2104), CORD		903	*A-1-534-817-XX	CORD, POWER	
17	7-685-133-19	SCREW +P 2.6X6 TYPE2 NON-SLIT		907	*1-615-664-11	PC BOARD, CONTROL SWITCH	
18	3-703-473-00	SCREW, TERMINAL		908	*A-2056-273-A	PC BOARD ASSY, AUDIO, MOUNTED (INCLUDING REC VOL, HEADPHONES JACK, PHOTO COUPLER, POWER SWITCH, REMOTE CONTROL, METER AND PIN JACK BOARDS)	
19	*3-312-615-11	HEAT SINK					

No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
51	3-304-419-51	BUTTON, EJECT		64	X-3318-922-1	BLOCK ASSY, FUNCTION BUTTON		102	3-319-682-01	.....		103	3-319-613-01	.....	
52	.....			65	7-685-547-01	SCREW +BTP 3X10 TYPE1		104	3-318-978-01	HOLDER, METER		105	3-312-441-00	R	
53	X-3318-937-1	PANEL ASSY, FRONT		66	3-318-989-01	JOINT (G), KNOB		106	3-318-941-01	SPACER (B), LED		107	7-621-775-60	SI	
54	*4-902-831-01	KNOB (POWER.L), T MOLD		68	*3-318-941-01	SPACER, LED		108	3-575-346-01	FI		109	*3-319-611-01	LI	
55	3-318-911-91	PLATE, SHIELD		71	3-318-964-22	HOLDER, REC VOL		110	3-319-669-01	SI		111	3-312-432-00	SI	
56	*3-318-967-01	BRACKET (B), MD		72	*3-318-974-01	BRACKET, REC VOL		112	*3-319-709-01	LI		113	3-575-457-00	PI	
57	*3-318-962-01	SLIDER, EJECT		74	3-318-986-01	BUTTON, REC VOL		114	7-623-924-11	WI		115	X-3319-625-1	P	
58	3-540-244-00	SPRING, TENSION		75	*3-318-976-01	BRACKET, CASE		116	3-319-713-01	SI		117	3-319-715-01	BI	
59	7-685-546-01	SCREW +BTP 3X8 TYPE1		77	7-621-775-10	SCREW +B 2.6X4		118	3-319-718-01	SI		119	3-319-719-01	SI	
60	3-577-029-00	BELT, SQUARE		61	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S									
62	*3-307-350-00	PULLEY (N), MOTOR		62	*3-307-350-00	PULLEY (N), MOTOR		902	1-548-574-31	COUNTER, TAPE (NORMAL TYPE)		113	3-575-457-00	PI	
63	3-558-708-11	WASHER, STOPPER		63	3-558-708-11	WASHER, STOPPER		908	*A-2056-273-A	PC BOARD ASSY, AUDIO, MOUNTED (INCLUDING REC VOL, HEADPHONES JACK, PHOTO COUPLER, POWER SWITCH, REMOTE CONTROL, METER AND PIN JACK BOARDS)		114	7-623-924-11	WI	

**TC-FX4040**

**TC-FX4040**



Remarks	No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
D ( INCLUDING OWER SWITCH, JACK BOARDS)	102	3-319-682-01	HOLDER, CASSETTE		120	*3-319-601-11	SPRING	
	103	3-319-613-01	PISTON (B)		121	7-671-112-11	BALL, STEEL	
	104	3-312-441-00	RING, PISTON		122	3-319-712-01	SPRING, COMPRESSION	
	105	3-313-292-21	RETAINER, CASSETTE		123	*X-3319-624-1	CHASSIS (S) ASSY, HEAD	
	106	7-621-775-60	SCREW +B 2.6X12		124	3-703-496-00	SCREW + PWH2X14	
	107	3-319-694-01	SPRING, TENSION		125	7-671-112-01	BALL, STEEL	
	108	3-575-346-01	FELT, BRAKE		126	X-3319-626-1	TABLE (L) ASSY, REEL	
	109	*3-319-611-01	LEVER (LEFT), BACK TENSION		127	3-319-607-01	BUSHING, REEL TABLE	
	110	3-319-669-01	LEVER, EJECT		128	X-3319-627-1	TABLE (L) (CB) ASSY, REEL	
	111	3-312-432-00	SPRING, TENSION		129	3-319-614-01	SPRING	
	112	*3-319-709-01	LEVER (B), LIFT, SWITCH		131	3-319-717-01	SPRING	
	113	3-575-457-00	PLATE (B), SHIELD, MOTOR		132	3-319-711-01	SPRING, TENSION	
	114	7-623-924-11	WASHER 3.0, NYLONE		135	3-531-760-00	CLAW, REEL SPINDLE	
	115	X-3319-625-1	PINCH LEVER ASSY		136	3-575-324-00	GEAR, LIMITER	
	116	3-319-713-01	SPRING, TENSION		137	3-564-027-11	FELT, LIMITER	
	117	3-319-715-01	BRACKET, HEAD		138	3-307-394-00	RETAINER (B), THRUST	
	118	3-319-718-01	SHIM, ADJUSTMENT, HEAD		139	3-575-332-00	GEAR, FR	
		3-319-718-11	SHIM, ADJUSTMENT, HEAD		140	3-575-304-00	SHAFT, GEAR, FR	
	119	3-319-719-01	SCREW, TOOTHED LOCK (+ 2X13)					

No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
151	7-685-879-01	SCREW +BVTT 3X30 (S)		171	3-555-124-00	SPRING, TENSION	
152	*3-319-665-01	RETAINER, THRUST		172	3-319-612-01	SPRING	
153	3-703-150-11	CLAMP		173	*X-3319-614-1	LEVER ASSY, PAUSE	
155	3-319-608-01	RETAINER, THRUST		174	3-319-606-01	SPRING	
156	7-685-645-11	SCREW +BVTP 3X6 TYPE2 N-S.		175	7-685-131-21	SCREW +P 2.6X4 TYPE2 SLIT	
157	3-319-710-01	BELT (R), CAPSTAN		176	3-319-602-01	SPRING	
158	X-3319-630-	FLYWHEEL (T) ASSY		178	3-319-603-01	LEVER, REC DETECTION	
161	3-307-482-00	WASHER, LUMILER		179	3-319-604-01	LEVER, HALF DETECTION	
162	*X-3319-615-1	LEVER ASSY, FWD LOCK		180	3-319-670-01	HOLDER, SWITCH, DETECTION	
163	3-319-688-01	GEAR, PAUSE CAM		181	7-685-865-01	SCREW +BVTT 2.6X12 (S)	
165	3-307-394-00	RETAINER (B), THRUST		182	3-319-649-01	SPRING	
166	7-687-204-21	TOTSU PTPWH 2X6 NON-SLIT, TYPE2		183	3-319-633-01	SPRING	
167	3-307-332-00	ARBOR, FIXED		184	*3-319-676-11	LEVER, FWD	
168	3-307-333-00	ARBOR, TRIGGER		185	X-3319-628-1	CHASSIS ASSY, MECHANICAL	
169	*3-319-668-01	PLATE, BRAKE		186	3-319-689-01	GEAR, FWD CAM	
170	3-319-662-01	RUBBER, BRAKE		901	1-452-202-00	MAGNET	

## SECTION 6

### ELECTRICAL PARTS LIST

## NOTE:

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:  
MF:  $\mu$ F, PF:  $\mu\mu$ F.

RESISTORS:  
• All resistors are in ohms.  
• F : nonflammable

COILS:  
• MMH : mH, UH :  $\mu$ H

SEMICONDUCTORS

In each case, U :  $\mu$ , for example:  
UA...:  $\mu$ A..., UPA...:  $\mu$ PA..., UPC...:  $\mu$ PC,  
UPD...:  $\mu$ PD...

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

#### ELECTRICAL PARTS

Ref. No.	Part No.	Description	Value	Tolerance	Voltage
901	1-452-202-00	MAGNET			
902	1-548-574-31	COUNTER, TAPE (NORMAL TYPE)			
903	△.1-534-817-XX	CORD, POWER			
907	*1-615-664-11	PC BOARD, CONTROL SWITCH			
908	*A-2056-273-A	PC BOARD ASSY, AUDIO, MOUNTED (INCLUDING REC VOL, HEADPHONES JACK, PHOTO COUPLER, POWER SWITCH, REMOTE CONTROL, METER AND PIN JACK BOARDS)			
C101	1-123-380-00	ELECT	1MF	20%	50V
C102	1-162-290-31	CERAMIC	470PF	10%	50V
C103	1-123-380-00	ELECT	1MF	20%	50V
C104	1-123-356-00	ELECT	10MF	20%	16V
C105	1-110-203-00	MYLAR	0.0047MF	5%	50V
C106	1-136-173-00	FILM	0.47MF	5%	50V
C107	1-136-167-00	FILM	0.15MF	5%	50V
C108	1-136-155-00	FILM	0.015MF	5%	50V
C109	1-136-169-00	FILM	0.22MF	5%	50V
C110	1-136-163-00	FILM	0.068MF	5%	50V
C111	1-136-161-00	FILM	0.047MF	5%	50V
C112	1-110-205-00	MYLAR	0.0068MF	5%	50V
C113	1-136-153-00	FILM	0.01MF	5%	50V
C114	1-123-369-00	ELECT	4.7MF	20%	50V
C115	1-123-379-00	ELECT	0.47MF	20%	50V
C116	1-124-185-00	ELECT	4.7MF	20%	50V
C117	1-161-321-00	CERAMIC	680PF	10%	50V
C118	1-136-157-00	FILM	0.022MF	5%	50V
C119	1-124-184-00	ELECT	3.3MF	20%	50V
C120	1-110-203-00	MYLAR	0.0047MF	5%	50V
C122	1-123-381-00	ELECT	2.2MF	20%	50V
C123	1-123-330-00	ELECT	22MF	20%	16V
C124	1-124-185-00	ELECT	4.7MF	20%	50V
C125	1-107-036-00	MICA	68PF	5%	500V
C126	1-161-318-00	CERAMIC	390PF	10%	50V
C127	1-107-165-00	MICA	56PF	5%	500V
C128	1-136-153-00	FILM	0.01MF	5%	50V
C129	1-110-199-00	MYLAR	0.0022MF	5%	50V
C131	1-136-156-00	FILM	0.018MF	5%	50V
C132	1-136-153-00	FILM	0.01MF	5%	50V
C133	1-123-380-00	ELECT	1MF	20%	50V
C134	1-123-381-00	ELECT	2.2MF	20%	50V
C135	1-123-380-00	ELECT	1MF	20%	50V
C136	1-123-356-00	ELECT	10MF	20%	16V
C137	1-162-282-31	CERAMIC	100PF	10%	50V
C139	1-161-330-00	CERAMIC	0.01MF	30%	25V

#### ELECTRICAL PARTS

Ref. No.	Part No.	Description	Value	Tolerance	Voltage
C140	1-162-282-31	CERAMIC	100PF	10%	50V
C301	1-123-356-00	ELECT	10MF	20%	16V
C302	1-123-356-00	ELECT	10MF	20%	16V
C303	1-123-381-00	ELECT	2.2MF	20%	50V
C311	1-123-356-00	ELECT	10MF	20%	16V
C312	1-129-708-00	FILM	0.0033MF	10%	630V
C313	1-130-291-00	FILM	0.0056MF	5%	100V
C314	1-130-285-00	FILM	0.0033MF	5%	100V
C315	1-130-285-00	FILM	0.0033MF	5%	100V
C316	1-123-381-00	ELECT	2.2MF	20%	50V
C317	1-123-379-00	ELECT	0.47MF	20%	50V
C318	1-123-306-00	ELECT	4.7MF	20%	10V
C320	1-123-369-00	ELECT	4.7MF	20%	50V
C321	1-123-356-00	ELECT	10MF	20%	16V
C322	1-161-330-00	CERAMIC	0.01MF	30%	25V
C324	1-162-113-00	CERAMIC	0.01MF	30%	16V
C401	1-110-203-00	MYLAR	0.0047MF	5%	50V
C402	1-123-381-00	ELECT	2.2MF	20%	50V
C403	1-162-284-31	CERAMIC	150PF	10%	50V
C404	1-162-284-31	CERAMIC	150PF	10%	50V
C406	1-162-294-31	CERAMIC	0.001MF	10%	50V
C407	1-123-380-00	ELECT	1MF	20%	50V
C410	1-123-356-00	ELECT	10MF	20%	16V
C411	1-123-356-00	ELECT	10MF	20%	16V
C415	1-123-322-00	ELECT	330MF	20%	16V
C416	1-162-113-00	CERAMIC	0.01MF	30%	16V
C417	1-162-113-00	CERAMIC	0.01MF	30%	16V
C418	1-162-113-00	CERAMIC	0.01MF	30%	16V
C501	1-123-311-00	ELECT	1000MF	20%	10V
C503	1-123-318-00	ELECT	33MF	20%	16V
C504	1-123-324-00	ELECT	1000MF	20%	16V
C505	1-123-310-00	ELECT	470MF	20%	10V
C506	1-123-318-00	ELECT	33MF	20%	16V
C507	1-123-324-00	ELECT	1000MF	20%	16V
CN301	*1-564-509-11	PLUG, CONNECTOR 6P			
CN302	*1-564-505-11	PLUG, CONNECTOR 2P			
CN401	*1-564-511-11	PLUG, CONNECTOR 8P			
CN404	*1-564-337-00	PIN, CONNECTOR 3P			
CN406	*1-564-507-31	PLUG, CONNECTOR 4P			
CN407	*1-564-507-11	PLUG, CONNECTOR 4P			
CN410	*1-560-280-00	CONNECTOR PIN 3P			
CN411	*1-560-039-00	PIN, CONNECTOR			
CN412	*1-560-039-00	PIN, CONNECTOR			
CT101	1-141-225-00	CAP, TUNING, TRIMMER			
CT201	1-141-225-00	CAP, TUNING, TRIMMER			

## ELECTRICAL PARTS

Ref. No.	Part No.	Description
D101	I-806-967-11	DIODE (LED BLOCK)
D102	I-806-968-11	DIODE (LED BLOCK)
D201	I-806-967-11	DIODE (LED BLOCK)
D202	I-806-968-11	DIODE (LED BLOCK)
D301	8-719-107-94	DIODE ISS202-1
D302	8-719-107-94	DIODE ISS202-1
D401	8-719-107-94	DIODE ISS202-1
D402	8-719-107-94	DIODE ISS202-1
D406	8-719-107-94	DIODE ISS202-1
D407	8-719-107-94	DIODE ISS202-1
D411	8-719-915-51	DIODE GL-9PG4
D412	8-719-919-04	DIODE GL-9PR4
D413	8-719-915-50	DIODE GL-9HY4
D416	8-719-107-94	DIODE ISS202-1
D419	8-719-910-66	DIODE HZ6B3L
D420	8-719-200-02	DIODE IIE2
D501	8-719-910-63	DIODE HZ6A3L
D502	8-719-200-23	DIODE IIE2
D503	8-719-200-23	DIODE IIE2
D504	8-719-200-23	DIODE IIE2
D505	8-719-200-23	DIODE IIE2
F101	I-231-388-00	FILTER, LOW PASS
F102	I-235-186-00	ENCAPSULATED COMPONENT
F201	I-231-388-00	FILTER, LOW PASS
F202	I-235-186-00	ENCAPSULATED COMPONENT
FR501	I-217-422-00	FUSIBLE
FR502	I-217-422-00	FUSIBLE
HE101	8-825-724-00	HEAD, ERASE EF-201-36
HRP101	8-825-507-80	HEAD (PP227-3602F)
IC101	8-759-912-79	IC IR2E02
IC201	8-759-912-79	IC IR2E02
IC301	8-759-600-02	IC M5218L
IC302	8-752-018-70	IC CX20187
IC303	8-759-600-02	IC M5218L
IC304	8-759-101-55	IC CX10032A
IC401	8-759-204-46	IC TC9310N-071
IC402	8-759-602-47	IC M50761-417P
J101	I-507-909-11	JACK, PIN 4P (LINE IN L)
J102	I-507-909-11	JACK, PIN 4P (LINE OUT L)
J201	I-507-909-11	JACK, PIN 4P (LINE IN R)
J202	I-507-909-11	JACK, PIN 4P (LINE OUT R)
J301	I-507-797-21	JACK, LARGE TYPE (MIC)
J302	I-507-982-11	JACK (LARGE TYPE) (HEADPHONES)
L101	1-408-923-00	MICRO INDUCTOR 8.2MMH
L102	1-408-930-00	MICRO INDUCTOR 33MMH
L201	1-408-923-00	MICRO INDUCTOR 8.2MMH
L202	1-408-930-00	MICRO INDUCTOR 33MMH
M401	X-3319-612-1	MOTOR ASSY, REEL
M402	1-541-239-00	MOTOR
PM401	1-454-316-00	SOLENOID, PLUNGER
PM402	1-454-316-00	SOLENOID, PLUNGER
PI401	8-719-902-90	PHOTO INTERRUPTOR SPI201-20

## ELECTRICAL PARTS

Ref. No.	Part No.	Description
Q101	8-729-102-03	TRANSISTOR 2SD1020
Q102	8-729-900-80	TRANSISTOR DTC114ES
Q103	8-729-606-33	TRANSISTOR 2SC2603F
Q201	8-729-102-03	TRANSISTOR 2SD1020-H
Q202	8-729-900-80	TRANSISTOR DTC114ES
Q203	8-729-606-33	TRANSISTOR 2SC2603F
Q301	8-729-194-57	TRANSISTOR 2SC945
Q302	8-729-194-57	TRANSISTOR 2SC945
Q303	8-729-606-33	TRANSISTOR 2SC2603F
Q304	8-729-900-61	TRANSISTOR DTA114ES
Q305	8-729-900-61	TRANSISTOR DTA114ES
Q306	8-729-606-33	TRANSISTOR 2SC2785
Q307	8-729-117-54	TRANSISTOR 2SA1175
Q401	8-729-900-80	TRANSISTOR DTC114ES
Q402	8-729-900-65	TRANSISTOR DTA114ES
Q403	8-729-900-80	TRANSISTOR DTC114ES
Q404	8-729-900-80	TRANSISTOR DTC114ES
Q405	8-729-117-54	TRANSISTOR 2SA1175
Q407	8-729-800-83	TRANSISTOR 2SB808
Q408	8-729-800-83	TRANSISTOR 2SB808
Q409	8-729-177-43	TRANSISTOR 2SD774
Q410	8-729-177-43	TRANSISTOR 2SD774
Q411	8-729-900-80	TRANSISTOR DTC114ES
Q412	8-729-177-43	TRANSISTOR 2SD774
Q417	8-729-900-80	TRANSISTOR DTC114ES
Q418	8-729-900-80	TRANSISTOR DTC114ES
Q419	8-729-900-85	TRANSISTOR DTA144WS
Q501	8-729-180-92	TRANSISTOR 2SD809-K
Q502	8-729-606-33	TRANSISTOR 2SC2603F
Q503	8-729-173-13	TRANSISTOR 2SB731
Q504	8-729-117-54	TRANSISTOR 2SA1175
Q505	8-729-811-24	TRANSISTOR 2SD1012
Q506	8-729-800-83	TRANSISTOR 2SB808
R101	1-247-867-00	CARBON 33K 5% 1/6W
R103	1-247-855-00	CARBON 10K 5% 1/6W
R104	1-247-819-00	CARBON 330 5% 1/6W
R105	1-247-865-00	CARBON 27K 5% 1/6W
R106	1-247-871-00	CARBON 47K 5% 1/6W
R107	1-247-843-00	CARBON 3.3K 5% 1/6W
R108	1-247-851-00	CARBON 6.8K 5% 1/6W
R109	1-247-822-00	CARBON 430 5% 1/6W
R110	1-247-847-00	CARBON 4.7K 5% 1/6W
R111	1-247-840-00	CARBON 2.4K 5% 1/6W
R112	1-247-851-00	CARBON 6.8K 5% 1/6W
R113	1-247-827-00	CARBON 680 5% 1/6W
R114	1-249-421-11	CARBON 2.2K 5% 1/6W
R115	1-247-855-00	CARBON 10K 5% 1/6W
R116	1-247-847-00	CARBON 4.7K 5% 1/6W
R117	1-247-863-00	CARBON 22K 5% 1/6W
R118	1-249-421-11	CARBON 2.2K 5% 1/6W
R119	1-249-421-11	CARBON 2.2K 5% 1/6W
R120	1-247-831-00	CARBON 1K 5% 1/6W
R121	1-247-833-00	CARBON 1.2K 5% 1/6W
R122	1-249-421-11	CARBON 2.2K 5% 1/6W
R123	1-247-840-00	CARBON 2.4K 5% 1/6W
R124	1-247-116-00	CARBON 240 5% 1/4W
R125	1-246-529-00	CARBON 220K 5% 1/4W

ELECTRICAL PARTS

Ref. No.	Part No.	Description	100	5%	1/4W
R126	1-247-107-00	CARBON	100	5%	1/4W
R127	1-246-524-00	CARBON	130K	5%	1/4W
R128	1-247-149-00	CARBON	5.6K	5%	1/4W
R129	1-247-863-00	CARBON	22K	5%	1/6W
R130	1-247-857-00	CARBON	12K	5%	1/6W
R131	1-247-858-00	CARBON	13K	5%	1/6W
R132	1-247-887-00	CARBON	220K	5%	1/6W
R133	1-247-821-00	CARBON	390	5%	1/6W
R135	1-247-831-00	CARBON	1K	5%	1/6W
R136	1-247-879-00	CARBON	100K	5%	1/6W
R137	1-247-859-00	CARBON	15K	5%	1/6W
R140	1-247-837-00	CARBON	1.8K	5%	1/6W
R141	1-247-815-00	CARBON	220	5%	1/6W
R142	1-249-421-11	CARBON	2.2K	5%	1/6W
R143	1-247-855-00	CARBON	10K	5%	1/6W
R144	1-247-859-00	CARBON	15K	5%	1/6W
R145	1-247-847-00	CARBON	4.7K	5%	1/6W
R146	1-247-879-00	CARBON	100K	5%	1/6W
R147	1-247-861-00	CARBON	18K	5%	1/6W
R148	1-247-878-00	CARBON	91K	5%	1/6W
R149	1-247-879-00	CARBON	100K	5%	1/6W
R150	1-247-855-00	CARBON	10K	5%	1/6W
R151	1-247-855-00	CARBON	10K	5%	1/6W
R155	1-247-841-00	CARBON	2.7K	5%	1/6W
R301	1-247-879-00	CARBON	100K	5%	1/6W
R302	1-247-883-00	CARBON	150K	5%	1/6W
R303	1-247-831-00	CARBON	1K	5%	1/6W
R304	1-247-831-00	CARBON	1K	5%	1/6W
R307	1-247-847-00	CARBON	4.7K	5%	1/6W
R308	1-247-835-00	CARBON	1.5K	5%	1/6W
R309	1-247-773-00	CARBON	3.9	5%	1/6W
R310	1-247-861-00	CARBON	18K	5%	1/6W
R311	1-247-861-00	CARBON	18K	5%	1/6W
R312	1-247-855-00	CARBON	10K	5%	1/6W
R313	1-247-858-00	CARBON	13K	5%	1/6W
R314	1-247-855-00	CARBON	10K	5%	1/6W
R315	1-247-840-00	CARBON	2.4K	5%	1/6W
R316	1-247-847-00	CARBON	4.7K	5%	1/6W
R317	1-247-879-00	CARBON	100K	5%	1/6W
R318	1-247-843-00	CARBON	3.3K	5%	1/6W
R319	1-247-861-00	CARBON	18K	5%	1/6W
R320	1-247-843-00	CARBON	3.3K	5%	1/6W
R321	1-247-855-00	CARBON	10K	5%	1/6W
R322	1-247-815-00	CARBON	220	5%	1/6W
R323	1-247-823-00	CARBON	470	5%	1/6W
R324	1-247-823-00	CARBON	470	5%	1/6W
R401	1-247-872-00	CARBON	51K	5%	1/6W
R402	1-247-863-00	CARBON	22K	5%	1/6W
R405	1-247-841-00	CARBON	2.7K	5%	1/6W
R406	1-247-903-00	CARBON	1M	5%	1/6W
R408	1-247-861-00	CARBON	18K	5%	1/6W
R409	1-247-857-00	CARBON	12K	5%	1/6W
R410	1-247-861-00	CARBON	18K	5%	1/6W
R411	1-247-807-00	CARBON	100	5%	1/6W

ELECTRICAL PARTS

Ref. No.	Part No.	Description	10	5%	1/6W
R412	1-247-783-00	CARBON	330	5%	1/6W
R413	1-247-819-00	CARBON	100K	5%	1/6W
R414	1-247-879-00	CARBON	10K	5%	1/6W
R415	1-247-855-00	CARBON	1K	5%	1/6W
R425	1-247-831-00	CARBON	5.6K	5%	1/6W
R426	1-247-831-00	CARBON	390	5%	1/6W
R427	1-247-821-00	CARBON	1K	5%	1/6W
R428	1-247-849-00	CARBON	22K	5%	1/6W
R429	1-247-819-00	CARBON	390	5%	1/6W
R430	1-247-831-00	CARBON	220	5%	1/6W
R431	1-247-831-00	CARBON	390	5%	1/6W
R434	1-247-863-00	CARBON	390	5%	1/6W
R435	1-247-815-00	CARBON	22K	5%	1/6W
R436	1-247-821-00	CARBON	10K	5%	1/6W
R437	1-247-821-00	CARBON	100K	5%	1/6W
R439	1-247-863-00	CARBON	1K	5%	1/6W
R440	1-247-855-00	CARBON	3.3K	5%	1/4W
R445	1-247-879-00	CARBON	560	5%	1/4W
R446	1-247-831-00	CARBON	2.7K	5%	1/4W
R501	1-247-143-00	CARBON	1K	5%	1/4W
R502	1-247-125-00	CARBON	1.2K	5%	1/4W
R503	1-247-131-00	CARBON	1K	5%	1/4W
R504	1-247-131-00	CARBON	1K	5%	1/4W
R505	1-247-141-00	CARBON	1K	5%	1/4W
R506	1-247-131-00	CARBON	1K	5%	1/4W
R507	1-247-131-00	CARBON	1K	5%	1/4W
R508	1-247-133-00	CARBON	1.2K	5%	1/4W
RV101	1-230-713-21	RES, VAR, SLIDE 20K/20K			
RV102	1-228-994-00	RES, ADJ, CARBON 10K			
RV104	1-228-994-00	RES, ADJ, CARBON 10K			
RV201	1-230-713-21	RES, VAR, SLIDE 20K/20K			
RV202	1-228-994-00	RES, ADJ, CARBON 10K			
RV204	1-228-994-00	RES, ADJ, CARBON 10K			
RY301	1-515-547-11	RELAY			
S301	1-570-252-11	SWITCH, PUSH (5 KEY)			
S302	1-570-252-11	SWITCH, PUSH (5 KEY)			
S303	1-570-252-11	SWITCH, PUSH (5 KEY)			
S304	1-570-252-11	SWITCH, PUSH (5 KEY)			
S305	1-570-252-11	SWITCH, PUSH (5 KEY)			
S405	1-554-303-00	SWITCH, KEY BOARD (REC)			
S406	1-554-303-00	SWITCH, KEY BOARD (FWD)			
S407	1-554-303-00	SWITCH, KEY BOARD (REW)			
S408	1-554-303-00	SWITCH, KEY BOARD (FF)			
S409	1-554-303-00	SWITCH, KEY BOARD (PAUSE)			
S410	1-554-303-00	SWITCH, KEY BOARD (REC MUTE)			
S411	1-554-303-00	SWITCH, KEY BOARD (STOP)			
S501	1-570-103-11	SWITCH, PUSH (POWER)			
T301	1-433-298-11	TRANSFORMER, BIAS OSCILLATION			
T401	1-448-155-11	TRANSFORMER, POWER			
X401	1-527-532-00	OSCILLATOR, CERAMIC			

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

ACCESSORY & PACKING MATERIAL

<u>No.</u>	<u>Part No.</u>	<u>Description</u>
	1-551-734-11	CORD, CONNECTION (RK- 74A)
	1-556-372-41	CORD, CONNECTION (4 CORE)
	3-318-958-01	CUSHION (LEFT), LOWER
	3-760-448-51	MANUAL, INSTRUCTION
	3-318-959-01	CUSHION (RIGHT), LOWER
	3-318-960-01	CUSHION (LEFT), UPPER
	3-318-961-01	CUSHION (RIGHT), UPPER
	3-318-988-31	INDIVIDUAL CARTON
	3-701-630-00	BAG, POLYETHYLENE
	4-876-352-00	SHEET, PROTECTION